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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,861	10/27/2003	Lars Stiblert	91000-000009/US	9220

30593 7590 10/21/2004

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EXAMINER	
COHEN, AMY R	

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 10/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/692,861	STIBLERT ET AL.	
	Examiner	Art Unit	
	Amy R Cohen	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-13 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 27 October 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 1/28/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Ye et al. (U. S. Patent No. 5,798,947).

Ye et al. teaches a method for calibrating a metrology stage in at least two dimensions using an artifact plate having marks forming a pattern (Col 4, lines 5-65), comprising the steps of: placing the artifact plate on the metrology stage in at least three positions (Steps 12-18, Fig. 8), assuming the geometrical properties of the metrology stage and the artifact plate and the positions of the artifact plate for each measurement (Steps 20, 24-32, Fig. 8), forming a model predicting the measurements of the artifact plate (Steps 20, 26-30, Fig. 8), measuring the marks by the metrology stage (Steps 14,-18, 24, Fig. 8), and inverting said model to improve the assumptions on metrology stage and artifact plate (Steps 20, 28-30, Fig. 8) (Col 4, line 5-Col 5, line 50).

Ye et al. teaches the method wherein the inverting is performed in a computer program (Col 5, lines 1-15 and Col 9, lines 34-62).

Ye et al. teaches the method wherein an iterative method is used to calculate successive improvements of the model (Col 10, lines 6-21).

Ye et al. teaches the method wherein a linear equation system is calculated that approximates the problem to be solved (Col 10, lines 6-21 and formulas found in columns 11-24).

3. Claims 5-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Rinn (U. S. Patent No. 6,317,991).

Rinn teaches a method for self calibration a metrology stage comprising the steps of: (a) providing an artifact plate (1) having a number of marks (5) scattered thereupon, which is arranged on the metrology stage (Figs. 1A-C), (b) measuring the position of the marks for at least three different measurement views of the plate, which measurement views are obtained using translation and/or rotation of the plate, whereby one set of position data for the plate is obtained for each measurement view (Col 4, line 61-Col 5, line 35), (c) assuming a predetermined shape of the stage, whereby a 2-dimensional stage correction function is determined (Col 4, lines 35-60), (d) calculate a 2-dimensional plate correction function using the available measured sets of position data for the plate and the stage correction function (Col 4, line 61-Col 5, line 35), (e) calculate 2-dimensional simulated position data for each mark in all measurement views (Col 6, lines 12-67), (f) recalculate the 2-dimensional stage correction function from the difference between the simulated position data and the measured position data (Col 6, lines 12-67), (g) repeat step (d)-(f) until the simulated position data is acceptable compared to the measured position data (Col 6, lines 12-67).

Rinn teaches the method wherein the marks on the plate are arranged in a two-dimensional grid structure (Figs. 1A-C).

Rinn teaches the method wherein an average value for all measured position data is used when calculating the plate correction function in step (d) (Col 6, lines 12-67).

Rinn teaches the method wherein the predetermined shape of the stage in step (c) is selected be a perfect shape, whereby a 2-dimensional stage correction function is zero across the stage (Col 4, lines 35-60).

Rinn teaches the method wherein the position data in step (b) is measured in 2 dimensions, whereby the plate is assumed to have a perfectly flat shape (Col 4, lines 35-60).

Rinn teaches the method wherein the position data in step (b) is measured in 3 dimensions, whereby a 2-dimensional set of position data for each measurement view may be calculated using a z-dimensional z-correction function (Col 2, line 65-Col 3, line 23).

Rinn teaches the method wherein the z- correction function is determined using information regarding the gradient of the plate at each mark and the thickness of the plate (Col 4, lines 35-60).

Rinn teaches the method wherein the repetition in step (g) ends when the deviation of the difference between the simulated position data and the measured position data is below a predetermined value (Col 6, lines 12-67, in fitting linear functions, there will be predetermined value at which the repetition ends).

Rinn teaches the method wherein the repetition in step (g) ends when a certain number of repetitions of step (d)-(f) has been performed (Col 6, lines 12-67, in fitting linear functions, there will be predetermined number of repetitions at which the repetition ends).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents disclose calibration methods Nahum et al. (U. S. Patent No. 6,781,694), Tsutsumi (U. S. Patent No. 6,535,781), Schaefer (U. S. Patent No. 6,601,434),

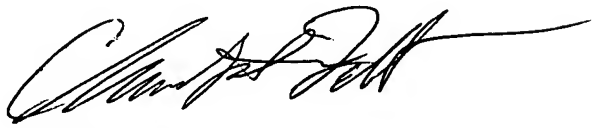
McMurtry et al. (U. S. Patent NO. 6,601,311), Mills (U. S. Patent No. 6,594,532), Ushio et al. (U. S. Patent No. 6,463,667), Kanagawa et al. (U. S. Patent No. 6,366,866), Balamurugan (U. S. Patent No. 6,174,788), and Nguyen (U. S. Patent No. 5,960,185).

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy R Cohen whose telephone number is (571) 272-2238. The examiner can normally be reached on 8 am - 5 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARC
October 18, 2004



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